

Badlands National Park

2007 Annual Technical Report Prepared by

Natural Resources Conservation Service
Plant Materials Center
Bismarck, North Dakota

Introduction

The National Park Service (NPS) has a need to preserve the native plant resources and revegetate disturbed park lands. The NPS requires that restoration of native plants will be accomplished using germplasm from populations as closely related genetically and ecologically as possible to the park populations. Quantities of native seed are needed to revegetate areas disturbed by construction activities for the proposed road rehabilitation project. The NPS has requested assistance from the Bismarck Plant Materials Center (PMC). The PMC has agreed to increase seed of five selected grass species collected at Badlands National Park. Technical assistance for planting, growing and cleaning of seed will also be provided to the park. The interagency agreement was signed in May 2007, and runs through FY 2010.

Targeted Species and Amounts

Species	Common name	PLS pounds
<i>Nassella viridula</i>	green needle grass	100
<i>Pascopyrum smithii</i>	western wheatgrass	200
<i>Elymus trachycaulus</i>	slender wheatgrass	100
<i>Bouteloua gracilis</i>	blue grama	10
<i>Sporobolus cryptandrus</i>	sand dropseed	5

Accomplishments

2007 - Seed was collected throughout the summer and fall by park staff. On July 24, 2007, Badlands National Park staff along with staff from the Natural Resources Conservation Service spent a day collecting seed at the park. All seed was inventoried at the Bismarck PMC and will be cleaned, tested and used in the planting of seed increase fields at the PMC. Each species of seed was assigned an accession number (identification number). Seed germination and purity will be tested by the North Dakota State Seed Department. The green needlegrass was dormant planted on November 30, 2007. All of the other species except sand dropseed will be seeded in the spring of 2008. Seed from the sand dropseed will be planted in the PMC greenhouse in February 2008 with a goal of 500 seedlings for use in establishing the seed production field. Following are details related to seed increase activities for each grass species.

Green needlegrass: accession 9092167

Collected seed: Dirty weight - 2.08 lbs; bulk after cleaning - 1.75 lbs.

Seed cleaning: Debearder and a two-screen office fanning mill. The debearder speed was 160 rpm for 15 minutes. The office mill screen sizes were #9 round on top and a 1/22 bottom screen, with air ½ open.

Seed quality: Purity - 99.91%; Germination - 4%; Dormancy - 92%.

Seeding date: November 30, 2007. Due to high seed dormancy, seed was planted in late fall. The planting is located in panel G-4 on the south west side.

Site preparation: The field was cultivated and packed. No preplant herbicides were used. Field conditions were good with a firm seedbed. Soil moisture was dry at the surface and froze below the 3-inch depth approximately. Air temperatures were in the teens at the time of seeding.

Seeding: Seeding rate was approximately 50 seeds (bulk)/linear foot. Twelve rows, approximately 424 feet long, were planted using a modified Truax grass drill with 42-inch row spacing (0.41 acre). The seed was planted at a depth of 1/2 inch. The field received approximately 2 to 3 inches of snow cover the day after planting.

Maintenance: NA

Plant performance: NA

Harvest: NA

Western wheatgrass: accession 9092165

Collected seed: Dirty weight - 20.86 lbs; bulk after cleaning - 8.25 lbs.

Seed cleaning: Hammer mill and a two-screen office fanning mill. The material was first run through a hammer mill to break the seed from the stem. The material was hammered milled twice. The first run was with a ¼-inch screen size. The second run was through a 3/16-inch screen. The office mill screen sizes were 1/12 X 1/2 on top and a blank screen on the bottom for the first run. The second run used a 1/14 X 1/4 screen on top and a blank on the bottom. The side plate setting was ¼ open on both runs.

Seed quality: Purity - 85.4%; Germination - 83%; Dormancy - 2%.

Seeding date: Planned for May 2008

Site preparation: NA

Seeding: NA

Maintenance: NA

Plant performance: NA

Harvest: NA

Slender wheatgrass: accession 9092166

Collected seed: Dirty weight - 4.41 lbs; bulk after cleaning - 2.0 lbs.

Seed cleaning: Hammer mill and two-screen office fanning mill. The seed was initially run through a hammer mill to separate seed from the stems. A ¼-inch screen size was used on the hammer mill and a slow speed was used. The material was fed at full rate. The material was hammer milled twice. The seed was then run through an office mill twice. The first run used a number 12 screen size for the top screen and a blank screen was used on the bottom. A number 10 screen size was used as the top screen with a blank screen being used on the bottom for the second run. The side plate setting on the office mill was ¼ open for both runs. A seed sample was sent in to the seed testing lab and is waiting purity and germination tests.

Seed quality: Pending

Seeding date: NA
Site preparation: NA
Seeding: NA
Maintenance: NA
Plant performance: NA
Harvest: NA

Blue grama: accession 9092168

Collected seed: Dirty weight - 0.99 lbs; bulk after cleaning - 135.1 grams.
Seed cleaning: Debearder and two-screen office fanning mill. The seed was processed through a debearder for 10 minutes before being run through a small office mill. The screens used were a number 10 screen for the top screen and a blank screen on the bottom. The seed was then hand screened to remove the larger sticks. A sample was sent to the seed testing lab and is waiting germination and purity results.
Seed quality: Pending
Seeding date: NA
Site preparation: NA
Seeding: NA
Maintenance: NA
Plant Performance: NA
Harvest: NA

Sand dropseed: accession 9092169

Collected seed: Dirty weight - 0.22 lbs; bulk after cleaning - TBD.
Seed Cleaning: The seed was separated from the stems by hand stripping. The seed was then hand screened using a pan screen to separate sticks and chaff out.
Seed Quality: No seed was sent in for testing.
Seeding date: The seed was planted into flats and placed in the greenhouse on February 14, 2008. As seed germinates it will be transplanted into containers. The goal is 500 plants that will be used for field establishment in May 2008.
Site Preparation: NA
Seeding: NA
Maintenance: NA
Plant Performance: NA
Harvest: NA